Chromatography Lab Report

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Chemistry Honors 1°

Results

Experiment 1:
Eluent: water

Column Color	red

Color	red	red	light red	light red	lighter red	lighter red	clear
Well #	1	2	3	4	5	6	7

Experiment 2:
Eluent: 70% ROH

Column Color	light purple

Color	purple	purple	purple	purple	light purple	light purple	lighter purple	clear
Well #	1	2	3	4	5	6	7	8

Experiment 3:
Eluent: 15% ROH

Column Color	purple

Color	red	purple	light purple	purple-blue	blue	blue	light blue	light blue	light blue
Well #	1	2	3	4	5	6	7	8	9

Color	light blue	lighter blue	lighter blue	lighter blue	lighter blue	clear
Well #	10	11	12	13	14	15

Experiment 4 (5%):
Eluent: first 5% ROH, then 70% ROH. Current: 5% ROH

Column Color	purple-red

Color	Dark red	Dark red	Dark red	Dark red	Dark red	red	red	red	red
Well #	1	2	3	4	5	6	7	8	9

Color	light red	light red	light red	light red	light red	light red	light red	light red	light red
Well #	10	11	12	13	14	15	16	17	18

Color	lighter red	lighter red	lighter red	lighter red	lighter red	clear
Well #	19	20	21	22	23	24

Experiment 4 (70%):
Eluent: first 5% ROH, then 70% ROH. Current: 70% ROH

Column Color	blue

Color	turkish	blue	blue	blue	blue	light blue	light blue	light blue	clear
Well #	1	2	3	4	5	6	7	8	9

Discussion

Experiment 1:

> Non of the dyes were eluated because the dyes have the same polarity as the stationary phase. The dyes and the stationary phase are non-polar so they attract/stick to each other. The mobile phase, water, which is polar; passed through without attaching to any of the dyes.

Experiment 2:

> Both dyes were eluated simulateneously. The mobile phase now contains 70% ROH so it becomes less polar than water. The dyes were both eluated simulateneously means that 70% ROH(isopropyl alcohol - mobile phase) have a similar molecular polarity compared to the dyes, causing both of the dyes to be attracted to it and get eluated.

Experiment 3:

> The dyes were eluated seperatly. The mobile phase(15% ROH) is more polar compared to 70% ROH, in which the dyes were eluated simulateneously. The dye that's a bit more polar will be eluated first(red dye) and the one that's less polar will be eluated later(blue dye). The red dye and the blue dye both get attracted to the isopropyl alcohol, but since the mobile phase is diluted with water, it's more polar and the more poler red dye gets eluated first. The blue dye was less polar so it took much longer to be eluated compared to the red dye.

Experiement 4:

> The 5% ROH phase only had the red dye eluated. This is because the red dye probably have similar molecular polarity with the 5% ROH, which is polar. The polarity of the blue dye that wasn't eluated is probably more non-polar, in which is was more attached/attracted to the stationary phase and did not get eluated.

> The 70% ROH phase eluated the rest of the blue dye. This is cause by the blue dye being less polar compared to the red dye so it didn't get carried along in the 5% ROH phase.

Note:

- To see more of the code/the ipynb file, please view github: https://github.com/Alvin-He/jupyter-notebooks/blob/main/Chromtography.ipynb